
VERIFICATION AND CERTIFICATION REPORT

M/s Enercon (India) Limited

**Enercon Wind Farm (Hindustan) Ltd
in Karnataka**

UN PA 1259

**Monitoring Period 4: 01/07/2012 – 30/09/2012
(Both days inclusive)**

SGS Climate Change Programme

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10/01/2013		CDM.VER1248 MP4	
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Organisation:		Client:	
SGS United Kingdom Limited		M/s Enercon (India) Limited	
Publication of Monitoring Report:			
Monitoring Period:		01/07/2012 to 30/09/2012	
First Monitoring Version and Date:		Version 01 dated 15/10/2012	
Final Monitoring Version and Date:		Version 04 dated 08/01/2013	
Summary:			
<p>SGS United Kingdom Ltd has performed the 4th periodic verification of the CDM project “Enercon Wind Farm (Hindustan) Ltd in Karnataka”, with UNFCCC reference number of 1259, registration date of 27/10/2008 and crediting period from 27/10/2008 to 26/10/2018. The verification includes confirming the implementation of the revised monitoring plan approved on 15/03/2011 and the application of the monitoring methodology as per ACM0002 version 06 dated 19/05/2006. A site visit was conducted to verify the data submitted in the monitoring report. SGS confirms the following has been reviewed:</p> <ul style="list-style-type: none"> (a) The registered PDD (approved on 08/01/2013), including the monitoring plan and the corresponding validation report^{/8/}; (b) Monitoring report, previous verification reports^{/12/}, approved RMP, validation opinion of approved RMP^{/10/} (c) The applied monitoring methodology; (d) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board; (e) All information and references relevant to the project activity’s resulting in emission reductions. <p>The project activity involves electricity generation by wind electricity generators (WEG) and supplying the same to the southern regional electricity grid. This is renewable energy generation which can replace the fossil fuel dominated grid connected electricity generation. The project activity involves the installation of 86 WEGs of capacity 0.8 MW each at Chitradurga and Tumkur districts of Karnataka, India, reaching a total installed capacity of 68.8 MW. These WEGs are of Enercon make E-48. The generated electricity is evacuated to Karnataka state grid substation.</p> <p>SGS confirms that the project is implemented in accordance with the Validated and Registered Project Design Document (approved on 08/01/2013). The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 45,359 tCO₂e emission reductions during period 01/07/2012 up to 30/09/2012.</p>			
Subject:			
CDM Verification			
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Abbreviations

BESCOM	Bangalore Electricity Supply Company
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reductions
CL	Clarification Request
CMP	or Conference of Parties serving as the Meeting of the Parties
COP/MOP	
CMS	Central Monitoring Station
CO ₂	Carbon Dioxide
CoP	Conference of the Parties
CPRI	Central Power Research Institute
CT	Current Transformer
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EF	Emission Factor
EIL	Enercon India Limited
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
ISO	International Organization for Standardization
JMR	Joint Meter Reading
KPTCL	Karnataka Power Transport Company Limited
KERC	Karnataka Electricity Regulatory Commission
kWh	Kilo watt hour
MP	Monitoring Plan
MR	Monitoring Report
MW	Mega watt
MWh	Mega Watt hour
NABL	National Accreditation Board for Testing and Calibration of Laboratories
O&M	Operation and Maintenance
OM	Operating Margin
PDD	Project Design Document
PLF	Plant Load Factor
PP	Project Participant
PPA	Power Purchase Agreement
QA/QC	Quality Assurance/Quality Control
RMP	Revised Monitoring Plan
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
WEG	Wind Electricity Generator

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1. Introduction

1.1 Objective

SGS United Kingdom Ltd has been contracted by 'M/s Enercon (India) Limited' (the project participant of the project) to perform an independent verification of its CDM project 'Enercon Wind Farm (Hindustan) Ltd in Karnataka'. CDM projects must undergo periodic audits and verification of emission reductions as the basis for issuance of Certified Emission Reductions (CERs).

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The emissions report conforms with the requirements of the monitoring plan in the registered PDD and the approved methodology; and
- The data reported are complete and transparent.

1.2 Scope

The scope of the verification is the independent and objective review and ex post determination of the monitored reductions in GHG emission by the project activity. The verification is based on the validated and registered project design document and the monitoring report. The project is assessed against the requirements of the Kyoto Protocol, the CDM Modalities and Procedures and related rules and guidance.

SGS has, based on the recommendations in the Validation and Verification Standard, employed a risk-based approach in the verification, focusing on the identification of significant reporting risks and the reliability of project monitoring.

Due professional care has been exercised and ethical conduct has been followed by the assessment team during the verification process. The verification report is a fair presentation of the verification activity.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Project Activity and Period Covered

This engagement covers emissions and emission reductions from anthropogenic sources of greenhouse gases included within the project boundary of the following project and period.

Title of Project Activity:	Enercon Wind Farm (Hindustan) Ltd in Karnataka
UNFCCC Registration Number:	1259
Monitoring Period Covered in this Report:	01/07/2012 to 30/09/2012
Project Participants:	Host Country: India PP: M/s Enercon (India) Limited Annex I Country: United Kingdom of Great Britain and Northern Ireland PP: Rabobank International
Location of the Project Activity:	Chikkabyaladakere, Kanubehalli, Elladakere and Arasinagundi villages in Chitradurga District of Karnataka state in India and Dasudi, Nelenuru, Ganadu, Annenahalli, Siddapura villages in Tumkur district of Karnataka state, in India.

The project activity involves electricity generation by WEGs and supplying the same to the southern regional grid. This is a renewable energy generation which can replace the fossil fuel dominated grid connected electricity generation. The project activity involves the installation of 86 WEGs, of capacity 0.8 MW each, at Chitradurga and Tumkur districts of Karnataka, India, reaching a total installed capacity of 68.8 MW. These WEGs are of Enercon make E-48. The generated electricity is evacuated to Karnataka state grid substation.

The first set of WEGs were commissioned on 29/09/2006 and last WEG was commissioned on 28/12/2006 as mentioned in the registered PDD (approved on 08/01/2013)^{/6/} and the commissioning certificates^{/24/}.

All the 86 WEGs are fully functional and this was verified by the assessment team during the site visit. Technical details of WEGs with respect to installation place and capacity have been verified during the site visit and found to be consistent with the details provided in the registered PDD^{/6/}.

2. Methodology

2.1 General Approach

SGS performs the verification work using a Periodic Verification Checklist prepared following the VVS. The Periodic Verification Checklist describes the verification approach and the sampling plan.

The checklist gives the assessment team a full understanding of:

- Activities associated with all the sources contributing to the project emissions and emission reductions, including leakage if relevant;
- Protocols used to estimate or measure GHG emissions from these sources;
- Collection and handling of data;
- Controls on the collection and handling of data;
- Means of verifying reported data; and
- Compilation of the monitoring report.

Using the Periodic Verification Checklist, SGS verified the implementation of the monitoring plan and the data presented in the Monitoring Report for the period in question. This involved a site visit and a desk review of the monitoring report. This verification report describes the findings of this assessment.

Only verification activities undertaken after the publication of the monitoring report on the UNFCCC CDM website were used as a basis for SGS to conclude our verification and submit a request for issuance of CERs to the Board.

2.2 Verification Team for this Assessment

A team of competency has been selected to perform the verification of the project.

Name	Role
Sudeep Kodialbail	Lead Assessor; Local Assessor and Technical Area Expert (1.2 Wind)
Ravikant Soni	Assessor

2.3 Means of Verification

2.3.1 Review of Documentation

The validated PDD, the monitoring report submitted by the client and additional background documents related to the project performance were reviewed. A complete list of all documents reviewed is attached in section 8 of this report.

2.3.2 Site Visits

As part of the verification, the following on-site inspection has been performed by Sudeep Kodialbail.

Location: Districts-Chitradurga and Tumkur; State-Karnataka; India	
Date: 07/11/2012 to 09/11/2012	
Coverage:	Source of Information / Persons Interviewed
<ul style="list-style-type: none"> Monitoring report Project design and implementation Conformance with Registered PDD and approved RMP Monitoring procedure Emission reduction calculations 	<p>Mr. Saujanya Kumar (Asst Manager CDM Corporate; Enercon)</p> <p>Mr. Sharad Dubey (Manager Operations; Enercon)</p>
<ul style="list-style-type: none"> Technical equipment and operation Data collection, operations and monitoring procedure Monitoring equipment testing and calibration Data uncertainty QA/QC procedures 	<p>Mr. Sharad Dubey (Manager Operations; Enercon)</p> <p>Mr. Mohammed (Assistant Executive Engineer, BESCOM)</p> <p>Mr. Himanshu Dutta (Sub-station in-charge, Enercon)</p>

2.4 Reporting of Findings

As an outcome of the verification process, the team can raise different types of findings.

In general, where insufficient or inaccurate information is available and clarification or new information is required the team shall raise a Clarification Request (CL) specifying what additional information is required.

Where a non-conformance arises the team shall raise a Corrective Action Request (CAR). A CAR is issued, where:

- I. Non-compliance with the monitoring plan or methodology are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- II. Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- III. Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- IV. Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants

The verification process may be halted until this information has been made available to comply with the requirements of the CDM Executive Board. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

A clarification request (CL) will be raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. All CARs and CLs raised during verification shall be resolved prior to submitting a request for issuance.

Corrective Action Requests and Clarification Requests are raised in the Periodic Verification Checklist. The Project Developer is given the opportunity to "close" outstanding CARs and respond to CLs.

Forward Action Requests (FARs) may be raised during verification for actions where the monitoring and reporting require attention and/or adjustment for the next verification period, which are for the benefit of future projects and future verification activities. These have no impact upon the completion of the verification activity.

All CARs, CLs and FARs for this verification period are included in this report.

2.5 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment Team, all documentation will be forwarded to a Technical Review Team. The task of the Technical Review Team is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

Technical Review Team

Name	Role
Vikas Bankar	Technical Reviewer and Technical Area expert scope 1 (TA 1.2 Wind)

3. Verification Findings

3.1 Project Implementation

This project activity is generation of electricity from WEGs and supplying the generated electricity to the Southern grid of India. The project, located at Chitradurga and Tumkur districts of Karnataka state in India, has an installed capacity of 68.8 MW (86 WEGs x 0.8 MW/WEG). The PP has signed a PPA^{/23/} with BESCOM for the sale of electricity to the grid. The project was registered as a CDM project on 27/10/2008^{/4/} and the same date is the starting date of the crediting period (fixed). The PP has undertaken a revision in the monitoring plan which was approved by the EB on 15/03/2011^{/4/}. This is the fourth verification of the project activity covering the period from 01/07/2012 to 30/09/2012. The PP has submitted a revised PDD^{/6/} with corrections during the 3rd Monitoring Period which has been approved on 08/01/2013 as reflected on the UNFCCC project webpage^{/4/}.

The project has been implemented; equipment installed and is being operated as described in the registered PDD (approved on 08/01/2013)^{/6/}. The monitoring plan implemented during the current monitoring period is in compliance with the revised and approved monitoring plan (RMP)^{/9/} and the applied methodology^{/13/}. This was verified during the site visit.

The project activity WEGs have been commissioned in 3 phases between 29/09/2006 and 28/12/2006 as mentioned in the Monitoring Report. The details of the WEGs installed are mentioned in the table below. All details mentioned in the below table have been verified against the commissioning certificates^{/24/} and is found to be correct.

Phase	No. of WEGs	Capacity of each WEG (MW)	Installed Capacity (MW)	Commissioning date
I	56	0.8	44.8	29/09/2006
II	9	0.8	7.2	26/10/2006
III	21	0.8	16.8	28/12/2006
Total	86		68.8	

In addition to the physical inspection of the site, the following documents have been reviewed by the assessment team during the site visit to verify the project implementation:

- Commissioning certificates^{/24/}
- Power Purchase Agreement^{/23/}
- Invoices^{/22/} raised by the PP to BESCOM
- Testing certificates^{/26/} of all energy meters
- Monthly JMR (Form B)^{/16/ /17/} at 33kV metering point
- Monthly JMR (Form B)^{/18/} at 220kV metering point (sub-station)
- Single line diagram^{/25/} indicating all the WEGs of the project activity
- Transmission loss calculation summary reports^{/20/} for current monitoring period

The assessment team confirms that there are no changes in the project design against the registered PDD (approved on 08/01/2013)^{/6/}. The project implementation related information provided in the Monitoring Report^{/14/} is consistent with that stated in the registered PDD^{/6/}.

The project was checked against the applicability criteria in the applied methodology ACM0002 Version 06^{/13/} and it is confirmed that the methodology^{/13/} is applicable to the project activity. The data and variables provided in the Monitoring Report^{/14/} are the same as stated in the approved RMP^{/9/}.

The assessment team has compared the reported emission reductions with the project emission reductions in the registered PDD (approved on 08/01/2013). A 20.90% increase was observed. Hence **CAR #1** was

raised requesting the PP to clarify the same, which has been discussed later in this section. The justification provided by the PP for the difference in the emission reductions has been checked and is accepted.

The verification of the metering systems is covered in section 3.6 of this report.

The PP has correctly used version 3.1 of the MR form, which is the latest version available on the UNFCCC website. Though the MS-Word format of the MR looks in line with the MR form template available on the UNFCCC website i.e. F-CDM-MR form version 03.1, however during the conversion to PDF format, some of the table borders do not appear. No revision in the format has been made in line with the paragraph 11 of the 'Guideline: Completing the monitoring report form' version 03.2.

In section E.6 of the MR Version 1 dated 15/10/2012 the PP has mentioned that the higher ER values compared to the values in the registered PDD is due to the seasonal nature of wind and that the current monitoring period covers the high wind season. Hence **CAR #1 (point 4)** was raised requesting the PP to justify the same with objective evidence. In response, the PP has submitted an excel sheet^{7/} showing the PLF calculation for a one year period from October 2011 to September 2012. The value used to calculate the actual PLF in the excel sheet are correct. The calculations in the excel sheet have been checked and are found to be correct. The actual PLF for the 12 month period from October 2011 to September 2012 has been correctly calculated to be 19.76%. The actual PLF for the 9 month period from October 2011 to June 2012 (i.e. excluding the current monitoring period) has been correctly calculated to be 15.64%; which indicates that the current monitoring period falls in the high wind season. The PP has also correctly calculated the actual PLF (32.04%) achieved during the current monitoring period. On comparing the actual PLF with the PLF considered during the validation (26.5%), it is found that the actual PLF is 20.89% higher than the PLF for the current monitoring period. This justifies the 20.9% increase in the actual ERs compared to the estimated ERs. Hence **CAR #1 (point 4)** was closed. For detailed discussions please refer CAR #1 (point 4) in section 9 of this report.

CAR #2 was raised to clarify the following issues:

1. The latest available version of the MR template available on the UNFCCC website has been published in EB70. The template used for the MR Version 2 is not the latest available one. The PP was requested to clarify the same. In responses, the PP has revised the MR in accordance with the latest MR form available on the UNFCCC website published in EB 70. The revised MR Version 3 has been checked to confirm that the PP has correctly filled the same. Hence accepted and closed out.
2. The units for estimated and actual emission reductions were not mentioned on the title page of the MR Version 2. In response, the PP has now correctly mentioned the units (tCO₂e) for estimated and actual emission reductions on the title page of the MR Version 3. Hence accepted and closed out.
3. The purpose of the data for the parameters in section D.2 of the MR Version 2 was not in line with the MR completion guidelines. In response, the PP has revised the purpose of the data for all the parameters in section D.2 of the MR to "Calculation of baseline emissions". This revision in the MR Version 3 is correct and in line with section D of the MR completion guidelines. Hence accepted and closed out.
4. Section E.6 of the MR Version 2 mentions "Further PLF during the remaining period except the monitoring period (Oct 11 to Sep 12) is 15.64%". The PP was requested to clarify the appropriateness of the same. In response, the PP has removed the following statement from Section E.6 of the MR "Further PLF during the remaining period except the monitoring period (Oct 11 to Sep 12) is 15.64%". This information is additional to the justification already mentioned. Hence accepted and closed out.

Hence **CAR #2** was closed. For detailed discussions please refer CAR #2 in section 9 of this report.

Based on the requirements of paragraph 226 to 228 of the VVS version 03.0^{1/} the assessment team confirms that the project has been implemented and is being operated as described in the registered PDD (approved on 08/01/2013)^{6/}.

3.2 Post registration changes

There are no post registration changes to the project activity during the current monitoring period. A correction to the project information mentioned in annex 2 of the approved RMP^{9/} has been approved by the EB on 08/01/2013 as reflected on the UNFCCC project webpage^{4/}. This is reflected in section B.2.2 of the MR Version 4 dated 08/01/2013.

CAR #1 (point 1) was raised requesting the PP is to clarify the date of approval of the same. In response, the PP has confirmed that the revised PDD (Version 6 dated 03/09/2012) submitted with the request for issuance of MP3 has been approved by the EB on 08/01/2013 as reflected on the webpage of this project activity (UN No. 1259). The PP has revised section B.2.2 in the MR to mention the approval of the PDD and the date of approval. This is in line with the guidelines for completing the MR. Hence accepted and closed out. Hence **CAR #1 (point 1)** is closed out. For detailed discussions please refer CAR #1 (point 1) in section 9 of this report.

3.2.1 Temporary deviations from registered monitoring plan or applied methodology

There are no temporary deviations from registered monitoring plan or applied methodology^{/13/}. It was verified and confirmed from the registered PDD (approved on 08/01/2013)^{/6/}, approved RMP^{/9/}; the applied methodology^{/13/} and on-site verification.

3.2.2 Corrections

There are no corrections during the current monitoring period.

A correction to the project information mentioned in annex 2 of the approved RMP^{/9/} was submitted to the EB, through a revised PDD^{/6/}, which was submitted along with the verification report for the previous monitoring period with the request for issuance. This correction has been approved by the EB on 08/01/2013 as reflected on the UNFCCC project webpage^{/4/}. This is also reflected in section B.2.2 of the MR Version 4 dated 08/01/2013.

3.2.3 Permanent changes from registered monitoring plan or applied methodology

There are no permanent changes from the approved RMP^{/9/} or applied methodology^{/13/} during the current monitoring period. This was verified and confirmed from the approved RMP^{/9/}, the UNFCCC project webpage^{/4/}, applied methodology^{/13/} and on-site verification. A revision in the monitoring plan has been approved on 15/03/2011^{/4/}.

3.2.4 Changes to project design of registered project activity

There are no changes to the project design of the registered project activity or applied methodology^{/13/}. It was verified and confirmed from the registered revised PDD (approved on 08/01/2013)^{/6/} and on-site verification.

3.2.5 Changes to start date of crediting period

There is no change to the start date of the crediting period. It was verified and confirmed from the UNFCCC project webpage^{/4/}.

3.3 Remaining Issues, CAR's, FAR's from Previous Validation or Verification

There are no pending issues from the validation or the previous verification. This was verified and confirmed from the project documents on the UNFCCC project webpage^{/4/}.

3.4 Compliance of the monitoring plan with the monitoring methodology.

The project has been registered with the "Consolidated methodology for grid-connected electricity generation from renewable resources" ACM0002 version 06^{/13/} dated 19/05/2006. The assessment team verified the revised monitoring plan against ACM0002 version 06^{/13/}, and confirms that the revised monitoring plan^{/9/} approved by the CDM EB on 15/03/2011 is in accordance with the approved methodology^{/13/} applied by the project activity.

The monitoring parameter relevant to this project activity listed in the applied methodology^{/13/} is:

- i. EGy – Electricity Supplied to the grid by the project

The monitoring parameters defined by in the approved RMP^{/9/} are:

- i. EGy – Net electricity Supplied to the grid by the project
- ii. EGexport – Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point

- iii. EGimport – Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point
- iv. T_E – Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the Enercon substation

As per the actual situation on the site, the parameter EGy is calculated using the parameters EGexport; EGimport and T_E. Hence, the PP has defined these parameters in the approved RMP^{9/} in addition to the parameter EGy. The approved RMP has been implemented from the 1st Monitoring period. This was checked from the verification report for the 1st Monitoring period available on the UNFCCC webpage^{4/} of this project. Hence, the monitoring plan (approved RMP^{9/}) of the registered project is in accordance with the applied methodology^{13/}.

A comparison between the requirement of the methodology^{13/}, for the parameter EGy, and the description of the same parameter in the approved RMP^{9/} is in the table below:

Registered PDD (approved on 08/01/2013) Approved Methodology	Requirement in the applicable methodology and relevant EB documents	Requirement in the approved RMP	Conclusion on the compliance of the monitoring plan in the PDD with the methodology
Data/Parameter	EGy	EGy	In compliance with the applicable methodology.
Description	Electricity supplied to the grid by the project	Net electricity supplied to the grid by the Project	In compliance with the applicable methodology.
Measured/Calculated /Default	Directly measured	Calculated	This parameter is calculated using the directly measured values of import and export as per the actual practice on site by the state utility (BESCOM), which is governed by the PPA signed specifically for this project activity. This approach has been described in the RMP approved by the EB on 15/03/2011. Hence accepted.
Source of data	Not Specified	JMR (Form B)	This is as per the actual practice on site by the state utility, governed by the PPA signed for this project activity. Hence accepted.
Monitoring equipment	Not Specified	Not Applicable since this is a calculated parameter	This parameter is calculated using the directly measured values of EGimport and EGexport. Hence accepted.
Measuring/Reading/ Recording frequency	Hourly measurement and monthly Recording	Recording Frequency: Monthly	The Hourly measurement and monthly Recording is for the directly measured EGy as per the applicable methodology. But since this parameter is calculated as justified in the row "Measured/Calculated /Default" above, hence the monthly recording frequency is acceptable since it is as per the actual practice on site by the state utility. Hence accepted.

Calculation method (if applicable)	Not Applicable	$EG_y = EG_{\text{export}} - 115\% \cdot EG_{\text{import}} - T_E$	This is as per the actual practice on site by the state utility. Hence accepted. The same formula is mentioned in the approved RMP.
QA/QC procedures	Electricity supplied by the project activity to the grid. Double check by receipt of sales.	The values EG_y mentioned in the JMR (Form B) will be cross-checked against values mentioned in the invoice raised on the state utility	This is in compliance with the applicable methodology.

Based on the above discussion, the assessment team is of the opinion that the monitoring plan (approved RMP^{9/}) of the registered project is in accordance with the applied methodology^{13/}.

Based on the requirements of paragraph 229 to 232 of the VVS version 03.0^{1/} the assessment team confirms that the monitoring plan in the approved RMP^{9/} is in compliance with the monitoring methodology^{13/}.

3.5 Completeness and accuracy of Monitoring

3.5.1 Verification of monitoring of parameters

Monitoring of reductions in GHG emissions resulting from the registered project have been implemented in accordance with the monitoring plan contained in revised monitoring plan^{9/} approved by the CDM EB on 15/03/2011. The monitoring mechanism, including the data collection system, is effective and reliable.

During the site visit, personnel involved at various levels of operation of the project activity have been interviewed. It has been confirmed that the plant personnel are conscious of the importance of monitoring activities. On-site verification of plant records also substantiate consistency in recording and reporting of monitored data.

The monitoring parameters defined by in the approved RMP^{9/} are:

- EG_y – Net electricity Supplied to the grid by the project
- EG_{export} – Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point
- EG_{import} – Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point
- T_E – Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the Enercon substation

The line diagram of the metering system of the project activity is indicated in Appendix 1 of the MR^{14/}. There are two 33 kV metering points to which 71 WEGs (i.e. 56.8 MW) and 15 WEGs (i.e. 12 MW) respectively involved in the project activity. Each metering point consists of two meters i.e. a main meter and a check meter. All 86 WEGs, through the 33 kV metering point, are connected to the 220 kV metering point at the sub-station. For the entire duration of the current monitoring period, only WEGs belonging to the project activity were connected to the 220 kV metering point at the sub-station. The WEGs belonging to other owners, which were earlier connected to the sub-station, have been dismantled. The details of the metering systems have been verified through the following means:

- Physical inspection of the site
- Interviewing the staff at the sub-station
- Interviewing the officials of BESCOM (state utility)
- The CMS of the O&M service provider located at the site
- JMR (Form B) for the current^{16/ 17/ 18/} and previous^{19/} monitoring periods

- vi. Transmission loss calculation sheet for the current^{/20/} and previous^{/21/} monitoring periods

EGy – Net electricity Supplied to the grid by the project

The analysis of the compliance of the actual monitoring, of the parameter EGy, with the approved RMP^{/9/} is shown in the table below.

Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology	Requirement in the approved RMP	Implementation of the project	Conclusion on the compliance of the implementation with the monitoring plan
Data/Parameter	EGy	EGy	In compliance
Description	Net electricity supplied to the grid by the Project	Net electricity supplied to the grid by the Project	In compliance
Measured/Calculated /Default	Calculated	Calculated	In compliance
Source of data	JMR (Form B)	JMR (Form B)	In compliance
Monitoring equipment	Not Applicable since this is a calculated parameter	Not Applicable since this is a calculated parameter	In compliance
Measuring/Reading/ Recording frequency	Recording Frequency: Monthly	Recording Frequency: Monthly	In compliance
Calculation method (if applicable)	$EGy = EG_{\text{export}} - 115\% \cdot EG_{\text{import}} - T_E$	$EGy = EG_{\text{export}} - 115\% \cdot EG_{\text{import}} - T_E$	In compliance
QA/QC procedures	The values EGy mentioned in the JMR (Form B) will be cross-checked against values mentioned in the invoice raised on the state utility	The values EGy mentioned in the JMR (Form B) will be cross-checked against values mentioned in the invoice raised on the state utility	In compliance

In summary, the actual of monitoring for EGy is in compliance with the approved RMP^{/9/}.

EGy is a calculated parameter, as indicated in the table above. This calculation is carried out by the state utility (BESCOM). The PP has no role in the calculation. This was verified by interviewing the BESCOM officials during the site visit. The calculated monthly values of EGy are directly sourced from two Form B^{/16/} ^{/17/} (JMRs) prepared by BESCOM at two separate 33 kV metering points i.e. for 56.8 MW and 12 MW. The PP has correctly reported the monthly values from the Form B (JMR) in the emission reduction spreadsheet^{/15/}. These monthly value of EGy has been checked with the monthly invoices^{/22/} raised by the PP and are found to be consistent. The monthly values of EGy have also been checked against the daily generation data^{/29/} recorded by the personnel of the O&M service provider (Enercon) at the 220 kV metering point at the sub-station. The values are found to be comparable and acceptable.

The value of EGy for the current monitoring period is 48,667.964 MWh. This parameter is used for the emission reduction calculations.

EGexport – Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point

The analysis of the compliance of the actual monitoring, of the parameter EGexport, with the approved RMP^{/9/} is shown in the table below.

Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology	Requirement in the approved RMP	Implementation of the project	Conclusion on the compliance of the implementation with the monitoring plan
Data/Parameter	EGexport	EGexport	In compliance
Description	Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two JMR (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point.	Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two JMR (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point.	In compliance
Measured/Calculated /Default	Measured	Measured	In compliance
Source of data	JMR (Form B)	JMR (Form B)	In compliance
Monitoring equipment	Two way trivector energy meters	Two way trivector energy meters	In compliance
Measuring/Reading/ Recording frequency	Recording Frequency: Monthly The meters are capable of recording and storing half hourly readings.	Recording Frequency: Monthly The meters are capable of continuous measurement; recording and storing half hourly readings.	In compliance
Calculation method (if applicable)	Not applicable	Not applicable	In compliance
QA/QC procedures	QA/QC procedures are mentioned in Annex 4 of the approved RMP.	QA/QC procedures are mentioned in Annex 4 of the approved RMP.	In compliance

In summary, the actual of monitoring for EGexport is in compliance with the approved RMP^{9/}.

EGexport is the summation of the energy exported to the grid, measured at the two 33 kV metering points (i.e. for 56.8 MW and 12 MW), as indicated in the table above. The electricity exported to the grid is monitored through the main meter, at the metering point. Apart from the main meter, the metering point also consists of a check meter. Both tri-vector energy meters have the capability of continuous measurement, which was verified during the site visit. A joint meter reading (Form B) is taken by the officials of BESCOM in the presence of the EIL representative at the two metering points. Form B records the readings of both the main and check meter. Both values have been checked and are found to be comparable. The monthly values of electricity exported are directly sourced from two Form B^{16/ 17/} (JMRs) prepared by BESCOM for the two metering points. The PP has correctly reported the monthly values in the emission reduction spreadsheet^{15/}.

The value of EGexport for the current monitoring period is 49,250.550 MWh. This parameter is used for calculating the parameter EGy. This calculation is carried out by the state utility (BESCOM). The entire process of arriving at the value of EGexport in the JMR (Form B) is in the control of BESCOM. The PP has no role in this process. This was verified by interviewing the BESCOM officials during the site visit.

EGimport – Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCO for 56.8 MW and 12 MW at 33 kV metering point

The analysis of the compliance of the actual monitoring, of the parameter EGimport, with the approved RMP^{9/} is shown in the table below.

Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology	Requirement in the approved RMP	Implementation of the project	Conclusion on the compliance of the implementation with the monitoring plan
Data/Parameter	EGimport	EGimport	In compliance
Description	Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two JMR issued by BESCO for 56.8 MW and 12 MW at 33 kV metering point.	Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two JMR issued by BESCO for 56.8 MW and 12 MW at 33 kV metering point.	In compliance
Measured/Calculated /Default	Measured	Measured	In compliance
Source of data	JMR (Form B)	JMR (Form B)	In compliance
Monitoring equipment	Two way trivector energy meters	Two way trivector energy meters	In compliance
Measuring/Reading/ Recording frequency	Recording Frequency: Monthly The meters are capable of recording and storing half hourly readings.	Recording Frequency: Monthly The meters are capable of continuous measurement; recording and storing half hourly readings.	In compliance
Calculation method (if applicable)	Not applicable	Not applicable	In compliance
QA/QC procedures	QA/QC procedures are mentioned in Annex 4 of the approved RMP.	QA/QC procedures are mentioned in Annex 4 of the approved RMP.	In compliance

In summary, the actual of monitoring for EGimport is in compliance with the approved RMP^{9/}.

EGimport is the summation of the energy imported from the grid, measured at the two 33 kV metering points (i.e. for 56.8 MW and 12 MW), as indicated in the table above. The electricity imported from the grid is monitored through the main meter, at the metering point. Apart from the main meter, the metering point also consists of a check meter. Both tri-vector energy meters have the capability of continuous measurement, which was verified during the site visit. A joint meter reading is taken by the officials of BESCO in the presence of the EIL representative at the two metering points. The Form B records the readings of both, the main and check meter. Both values have been checked and are found to be comparable. The monthly values of electricity imported are directly sourced from two Form B^{16/ 17/} (JMRs) prepared by BESCO for the two metering points. The PP has correctly reported the monthly values in the emission reduction spreadsheet^{15/}.

The value of EGimport for the current monitoring period is 0 MWh. This parameter is used for calculating the parameter EGy. This calculation is carried out by the state utility (BESCOM). The entire process of arriving at the value of EGimport in the JMR (Form B) is in the control of BESCOM. The PP has no role in this process. This was verified by interviewing the BESCOM officials during the site visit.

T_E – Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the Enercon substation

The analysis of the compliance of the actual monitoring, of the parameter T_E, with the approved RMP^{/9/} is shown in the table below.

Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology	Requirement in the approved RMP	Implementation of the project	Conclusion on the compliance of the implementation with the monitoring plan
Data/Parameter	T _E	T _E	In compliance
Description	Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the Enercon substation.	Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the Enercon substation.	In compliance
Measured/Calculated /Default	Calculated (by the state utility)	Calculated (by the state utility)	In compliance
Source of data	JMR (Form B)	JMR (Form B)	In compliance
Monitoring equipment	Not Applicable	Not Applicable	In compliance
Measuring/Reading/ Recording frequency	Monthly recording frequency	Monthly recording frequency	In compliance
Calculation method (if applicable)	Calculation method is described in section B.7.2 of the approved RMP and is from the signed PPA	Calculation method is described in section B.7.2 of the approved RMP and is from the signed PPA	In compliance
QA/QC procedures	QA/QC procedures are mentioned in Annex 4 of the approved RMP.	QA/QC procedures are mentioned in Annex 4 of the approved RMP.	In compliance

In summary, the actual of monitoring for T_E is in compliance with the approved RMP^{/9/}.

Transmission losses refer to the energy loss incurred between the 2 metering points for the project WEGs connected at 33 kV substations and the receiving substation at Dasudi village where voltage is stepped up to 220 KV and exported to the grid. The transmission losses are calculated by the state utility considering the export readings of the meter at the 220 kV substation as well as the export readings at the 33 kV metering point. The monthly values of transmission loss are directly sourced from two Form B^{/16/ /17/} (JMRs) prepared by BESCOM for the two metering points. The PP has correctly reported the monthly values in the emission reduction spreadsheet^{/15/}. These monthly values are cross-checked with the values in the monthly Line loss calculation sheet^{/20/} issued by BESCOM and are found to be consistent. This value has also been checked with the invoices^{/22/} raised to the state utility and are found to be consistent.

The value of this parameter is 582.586 MWh for the current monitoring period. This parameter is used for calculating the parameter EGy. This calculation is carried out by the state utility (BESCOM). The entire process of arriving at the value of EGimport in the JMR (Form B) is in the control of BESCOM. The PP has no role in this process. This was verified by interviewing the BESCOM officials during the site visit.

The JMR (Form B), from which all parameters are sourced, is prepared and endorsed by an external government agency i.e. the State Electricity Board and the PP has no influence in the entire procedure. Hence the data issued by the state electricity board through Form B is considered to be authentic.

In accordance with paragraphs 233-236 of the VVS version 03.0^{1/}, the assessment team confirms that the actual monitoring activities observed on site is in compliance with the approved RMP^{9/}. The applicable parameters stated in the approved RMP^{9/} and the applied methodology^{13/} have been sufficiently monitored. The responsibilities and authorities for monitoring and reporting are in accordance with what is stated in the approved RMP^{9/}. The information flow (data generation, aggregation, recording, calculation and reporting) for the parameter to be monitored, including its values in the final version of the MR^{14/}, have been correctly reported and confirmed by the assessment team.

3.5.2 Verification of implementation of sampling plan

Not Applicable

3.6 Accuracy of Equipment

The line diagram of the metering system of the project activity is indicated in Appendix 1 of the MR^{14/}. There are two 33 kV metering points to which 71 WEGs (i.e. 56.8 MW) and 15 WEGs (i.e. 12 MW) respectively, are connected. All 86 WEGs, through the 33 kV metering point, are connected to the 220 kV metering point at the sub-station. Each metering point consists of two meters i.e. a main meter and a check meter. For the entire duration of the current monitoring period, only WEGs belonging to the project activity were connected to the 220 kV metering point at the sub-station.

The meter details, verified by the assessment team, as reported in the MR are summarized in the below table:

Metering Point Identification	KBCWP-02 (56.8 MW) at 33 kV	KBCWP-03 (12 MW) at 33 kV	KBCWP-01 (68.8 MW) at 220 kV sub-station
Monitoring equipment	Trivector Energy Meter	Trivector Energy Meter	Trivector Energy Meter
Monitoring parameter	EGexport	EGimport	N/A
S/N	5389967 (Main Meter) 5389970 (Check Meter)	5463844 (Main Meter) 5463845 (Check Meter)	6605121 (Main Meter) 6605122 (Check Meter)
Type	L&T	L&T	L&T
Level	0.2	0.2	0.2
Meter Testing frequency requirement	Annual	Annual	Annual
Meter Testing date	24/01/2012; 24/07/2012	24/01/2012; 25/06/2012	08/12/2011; 24/07/2012
Validity	One year	One year	One year
Are there delays in testing/calibration?	No	No	No
Testing / Calibration Entity	KPTCL or BESCO as per approved RMP. This has been mentioned as state utility in the MR.		

**Accreditation
Certificate for the
calibration entity**

As per PPA, the periodic calibration is being done by state utility (BESCOM) and PP has no involvement in the calibration process. The calibration of the reference meter is carried out at the laboratory of The Central Power Research Institute, Government of India. The laboratories of CPRI are accredited under National Accreditation Board for Testing and Calibration of Laboratories (NABL), which is the National body for accreditation of Laboratories

The metering systems, which are summarised in the table above, have been verified through the following means:

- i. Physical inspection of the meters during the site visit
- ii. Interviewing the staff at the sub-station
- iii. Interviewing the officials of BESCOM (state utility)
- iv. The CMS of the O&M service provider located at the site
- v. JMR (Form B) for the current^{/16/ /17/ /18/} and previous^{/19/} monitoring periods
- vi. Meter test certificates^{/26/} for the entire monitoring period
- vii. Transmission loss calculation sheet for the current^{/20/} and previous^{/21/} monitoring periods

Based on the above mentioned means of verification, the assessment team confirms that:

- The meter details are correctly mentioned in the MR^{/14/}
- The meter details are consistent throughout all verified documents
- The entire metering system is in the custody of the state utility. The PP has no control on the same
- The responsibilities and authorities for monitoring and reporting are in accordance with what is stated in the approved RMP^{/9/}.
- The accuracy of the equipment used for monitoring is in accordance with the relevant guidance provided by the CDM Executive Board
- The monitoring equipment are controlled and calibrated in accordance with the approved RMP^{/9/}

The testing/calibration of the reference meter (No. IDCAL 1213C0002) was also discussed during the interview with the Assistant Executive Engineer from the state utility (BESCOM). The assessment team was shown the original meter test certificate of the reference meter issued by CPRI during the visit to the BESCOM office. The reference test meter has an accuracy class of 0.1%, which is greater than that of the meters installed at the metering points. The testing of the reference test meter is the responsibility of BESCOM. It has an annual testing frequency. The latest date of calibration of the reference meter is 10/04/2012 and the due date is 09/04/2013.

The Gazette of India (Registered NO. DL (N) – 04/0007/2003 – 15) dated 26/07/2010 which is a gadget for metering regulations in India clearly mentions that for voltage of 650 V up to 33 kV, 0.5s and better is recommended. Hence, the accuracy classes of 0.2s of energy meters installed at the sites are of a better accuracy class and it is accepted.

The table in section C of the MR Version 1 dated 15/10/2012 mentions details of meter test checking during monitoring period. **CAR #1 (point 2)** was raised requesting the PP to clarify the inconsistency in the dates mentioned under the column titled “Last date of meter calibration” between the MR and the meter test certificates submitted during the site visit. The PP was also requested to clarify if the dates refer to the last date of ‘meter calibration’ or ‘meter testing’. In response, the PP has correctly revised the heading of the column titled “Last date of meter calibration” to “Meter Test Checking detail before monitoring period”. The verification team has confirmed that all dates mentioned under this column are prior to the start date of the current monitoring period. The dates under this column are consistent between the MR and the meter test certificates submitted during the site visit. The PP has also clarified that the dates refer to the dates of ‘meter testing’ and not ‘meter calibration’. The same is now reflected in section C of the MR and has been

confirmed from the meter test certificates submitted during the site visit. The authenticity of the meter test certificates were confirmed during the site visit by interviewing the officials from the state utility. Hence accepted and closed out. Hence **CAR #1 (point 2)** was closed. For detailed discussions please refer CAR #1 (point 2) in section 9 of this report.

As per paragraph 234 (c) to (e) of the VVS, version 03.0^{/1/}, the verification team confirms that

- The equipment used for monitoring is in accordance with the relevant guidance provided by the CDM Executive Board and it is controlled and calibrated in accordance with the monitoring plan
- Monitoring results are consistently recorded as per approved frequency
- Quality assurance and quality control procedures have been applied in accordance with the monitoring plan

3.7 Summary of compliance with the calibration frequency requirements for measuring instruments.

The calibration of all meters is in the control of BESCOM / KPTCL. The PP has no control over the same. The actual testing of the meters is carried out by the officials of BESCOM / KPTCL on a quarterly basis which varies based on the availability of staff; weather conditions; etc. This was confirmed during the interview with the officials at BESCOM. As per the approved RMP^{/9/} the meters are to be tested annually. This testing frequency has been followed for the present as well as the previous monitoring period. Hence the assessment team has confirmed that the testing of the meters cover the entire monitoring period. The meter test reports^{/26/} have been checked to confirm that the errors observed were within permissible limits.

There is no delay in meter testing during the current monitoring period. The meter test certificates^{/26/} have been checked to confirm the same. Hence paragraph 4 (a) of EB 52 Annex 60 i.e. Guidelines for assessing compliance with the calibration frequency requirements is not applicable for the current monitoring period.

CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006 which is considered as national standard mentions that "All interface meters shall be tested at least once in five years."

3.8 Accuracy of Emission Reduction Calculations

The calculation of emission reductions in the latest excel spreadsheet^{/15/} submitted by the PP is found to be correct. The findings and the satisfactory responses regarding the ER calculations has been discussed later in this section. The details of the reported and the verified values for all parameters are listed in section 4, 'Calculation of Emission Reductions'.

The parameter EGy is used for the emission reduction calculations. The parameters EGexport; EGimport and T_E are used to calculate EGy. The PP has provided the complete set of data for the parameter EGexport; EGimport and T_E in the ER spreadsheet^{/15/}. This data has been verified as described in section 3.5.1 above. The formulae & method used to calculate the baseline emissions, project emissions and leakage are appropriate and in line with the approved methodology ACM0002 version 6^{/13/}.

The baseline emission factor has been calculated as per the guidance provided in ACM0002 version 6^{/13/}. The Grid Emission Factor 0.93204 tCO₂/MWh has been taken from the Central Electricity Authority^{/28/} (Ministry of Power, Government of India) and the same is reported in registered PDD (approved on 08/01/2013)^{/6/}. This is an ex-ante parameter and remains constant throughout the crediting period.

The values of OM; BM and CM mentioned in section B.6.2 and Annex 3 of the registered PDD^{/6/} are inconsistent in term of the number of decimal places. For the sake of consistency, these values were made consistent in the MR (section D.1 and Annex 1) for the previous monitoring period (MP3) of this project activity by using the value mentioned in annex 3 of the registered PDD (approved on 08/01/2013). This does not have any effect on the ER calculations. The same values have been consistently used in the MR (section D.1 and Annex 1) for the current monitoring period as well.

As per CER excel spreadsheet^{/15/} submitted by the PP, the net emission reductions for current monitoring period was verified as 45,359 tCO₂ for current monitoring period. The difference between the estimated and verified ERs has been discussed under 3.1 of this report.

CAR #1 (point 3) was raised requesting the PP to clarify the inconsistency in the decimal places for EGy, in the table titled 'Baseline Emission Reductions calculation for project activity' in section E.1 of the MR version 1 dated 15/10/2012. The monthly values have 2 decimal places while the total value has 3 decimal places. In response, the PP has now consistently used 3 decimal places for all values of EGy. Hence **CAR #1 (point 3)** was closed out. For detailed discussions please refer CAR #1 (point 3) in section 9 of this report.

According to the assessment in section 3.5, 3.7, 3.11; and as per the requirements of paragraphs 244 to 246 of the VVS version 03.0^{/1/} it has been confirmed by the assessment team that in the final version of the MR and the ER calculation spreadsheet:

- (a) All the data requested for the ER calculation in this monitoring period were monitored and recorded in a complete manner
- (b) All the reported data have been checked against the original data source where they were quoted from
- (c) The methods and formulae for calculation of baseline emissions, project emissions and leakage specified in the registered PDD (approved on 08/01/2013)^{/6/} have been followed
- (d) The emission factors has been applied correctly in accordance with the registered PDD (approved on 08/01/2013)^{/6/}

3.9 Quality of Evidence to Determine Emission Reductions

Critical parameters used for the determination of the Emission Reductions are discussed in section 3.4 above. All the data recorded is in compliance with the Monitoring Report.

3.10 Management and operational System and Quality Assurance

The companies involved in the project have ISO 9001:2008, and ISO14001:2004 quality assurance system implemented, therefore we can affirm that the management system of the CDM project is in place, with the responsibilities properly identified and in place. The Head (CDM) and site in-charge of the PP were interviewed during the site visit to confirm the same.

In order to verify the data quality, the Company involved in the project works in accordance with a quality assurance procedure, which establishes the implementation of the operational and management structure.

3.11 Data from External Sources

The baseline emission factor was determined ex-ante and fixed for the entire crediting period as mentioned in section B.6.2 of registered PDD (approved on 08/01/2013)^{/6/}. Emission factor was calculated by the combined margin approach with 75% and 25% weights for OM & BM respectively, using data available in CO2 Baseline Database for the Indian Power Sector version 1.1 published by Central Electricity Authority^{/28/} (CEA).

The value of baseline emission factor used in emission reduction calculations for current monitoring period is 0.93204 tCO₂/MWh as reported in the Monitoring Report. It is found to be consistent with the value of EF mentioned in the registered PDD version 06 dated 03/09/2012^{/6/} approved on 08/01/2013^{/4/}.

4. Calculation of Emission Reductions

Parameter	Reported Value MR Version 01	Verified Value MR Version 04
EGexport (MWh)	49,250.550	49,250.550
EGimport (MWh)	0.000	0.000
T _E (MWh)	582.586	582.586
EGy (MWh)	48,667.964	48,667.964
Grid Emission Factor (tCO _{2e} /MWh)	0.93204	0.93204

The baseline emissions (BE_y) are calculated as follows:

$$\begin{aligned}
 BE_y &= EG_y \text{ (MWh)} \times \text{Grid emission Factor (t CO}_{2e}\text{/MWh)} \\
 &= 48,667.964 \times 0.93204 \\
 &= 45,359 \text{ tCO}_{2e}
 \end{aligned}$$

BE_y has been calculated on a monthly basis using monthly values of EG_y and has been rounded down in the excel spreadsheet which results in conservative emission reductions as compared to calculating BE_y using the summation of EG_y for the entire monitoring period. For detailed calculations, please refer the emission reduction excel spreadsheet.

As per methodology and as described in section B.6.1 of the registered PDD (approved on 08/01/2013), Project emissions (PE_y) and leakage (Ly) and are zero.

Thus emission reductions are calculated as follow:

$$\begin{aligned}
 ER_y &= BE_y - PE_y - Ly \\
 &= 45,359 - 0 - 0 \\
 &= 45,359 \text{ tCO}_{2e}
 \end{aligned}$$

5. Recommendations for Changes in the Monitoring Plan

Recommendation for changes in the monitoring plan was made during first verification and the revised monitoring plan has been approved by the CDM EB on 15/03/2011. No recommendation is made for changes in the approved revised monitoring plan during the current monitoring period.

6. Overview of Results

Assessment Against the Provisions of Decision 17/CP.7:

Is the project documentation in accordance with the requirements of the registered PDD and relevant provision of decision 17/CP.7, EB decisions and guidance and the COP/MOP?

Yes. The results of the compliance assessment are recorded in the verification checklist which is used as an internal report only.

Have on-site inspections been performed that may comprise, inter alia, a review of performance records, interviews with project participants and local stakeholders, collection of measurements, observations of established practices and testing of the accuracy of monitoring equipment?

Yes. Sudeep Kodialbail visited the sites and undertook interviews, collected data, audited the implementation of procedures, checked calibration certificates and checked data, inter alia.

The results of the site visit are recorded in the verification checklist which is used as an internal report only.

The evidences have been checked and collected. The final monitoring report is attached with this verification report.

Has data from additional sources been used? If yes, please detail the source and significance.

Emission Factor of the Grid used for emission reduction calculation has been determined ex-ante from version 1.1 of CO₂ baseline database for the Indian power sector published by Central Electricity Authority (CEA), Ministry of Power, Government of India. The value used is 0.93204 tCO₂/MWh fixed for the entire crediting period. This data is publicly available and verified to be acceptable.

Please review the monitoring results and verify that the monitoring methodologies for the estimation of reductions in anthropogenic emissions by sources have been applied correctly and their documentation is complete and transparent.

Yes. The monitoring methodology has been correctly applied and the monitoring report and supporting references are complete and transparent.

Have any recommendations for changes to the monitoring methodology for any future crediting period been issued to the project participant?

No.

Determine the reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the CDM project activity, based on the data and information using calculation procedures consistent with those contained in the registered project design document and the monitoring plan.

The data used in anthropogenic emission reduction calculation is consistent with those contained in the registered PDD and monitoring plan. The emission reduction was 37,520 tCO₂ for the period 01/07/2012 to 30/09/2012 as per the estimation made in the registered PDD. The actual emission reduction has been verified as 45,359 tCO₂ for the same period.

Identify and inform the project participants of any concerns related to the conformity of the actual project activity and its operation with the registered project design document. Project participants shall address the concerns and supply relevant additional information.

No such non conformity of the actual project activity and its operation with the registered project design document has been observed.

Post monitoring report on UNFCCC website

*Yes, the monitoring report is available at ref. 1259 on the UNFCCC website
(<http://cdm.unfccc.int/Projects/DB/DNV-CUK1185356859.49/view>)*

7. Verification and Certification Statement

SGS United Kingdom Ltd has been contracted by 'M/s Enercon (India) Limited' to perform the verification of the emission reductions reported for the CDM project 'Enercon Wind Farm (Hindustan) Ltd in Karnataka' and UNFCCC Reference Number 1259 in the period 01/07/2012 to 30/09/2012.

The verification is based on the validated and registered project design document and the monitoring report for this project. Verification is performed in accordance with section I of Decision 3/CMP.1, and relevant decisions of the CDM EB and COP/MOP. The scope of this engagement covers the verification and certification of greenhouse gas emission reductions generated by the above project during the above mentioned period, as reported in monitoring report version 04 dated 08/01/2013.

The management of M/s Enercon (India) Limited is responsible for the preparation, calculation and determination of GHG emission reductions from the project. The development and maintenance of records and reporting procedures are in accordance with the monitoring report.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period 01/07/2012 to 30/09/2012 based on the reported emission reductions in the Monitoring Report version 04 dated 08/01/2013 for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, SGS planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

SGS confirms that the project is implemented as described in the validated and registered project design documents. Based on the information we have seen and evaluated, we confirm the following:

Project Title:	Enercon Wind Farm (Hindustan) Ltd in Karnataka
UNFCCC Reference Number:	1259
Registered PDD and Approved Used for Verification:	Registered PDD Version 06 dated 03/09/2012 approved on 08/01/2013 RMP approved 15/03/2011
Methodology Used for Verification:	ACM0002 version 06 dated 19/05/2006
Applicable Period:	01/07/2012 to 30/09/2012
Total GHG Emission Reductions Verified:	45,359 tCO ₂ e

Signed on behalf of the Verification Body by Authorized Signatory

Signature:



Name: Siddharth Yadav

Date: 10/01/2013

8. Document References

1.	<u>Clean Development Mechanism Validation and Verification Standard version 03.0</u>		
2.	<u>Guidelines for completing the monitoring report form version 03.2</u>		
3.	<u>Clean Development Mechanism Project Standard version 02.1</u>		
4.	<u>UNFCCC web link</u> of the CDM project activity (UN No. 1259)		
5.	<u>Registered PDD</u> (Version 5 dated 01/10/2008)		
6.	<u>Registered PDD</u> Version 6.0 dated 03/09/2012 approved on 08/01/2013		
7.	PLF calculation excel spreadsheet		
8.	<u>Validation Report</u> of the registered CDM project activity (Report No. 2007-1021 Revision No. 03 dated 24/10/2008 issued by DNV)		
9.	<u>Approved RMP</u> (Date of CDM EB approval: 15/03/2011)		
10.	<u>RMP validation opinion</u> issued by TUV Nord dated 24/02/2011		
11.	<u>MP3</u> – Final MR (Version 4 dated 03/10/2012)		
12.	<u>Verification Reports of previous monitoring period</u>		
13.	<u>ACM0002</u> version 06 dated 19/05/2006		
14.	Monitoring Report covering monitoring period 01/07/2012 to 30/09/2012		
	Version No.	Date	Remarks
	1	15/10/2012	This version was uploaded on the UNFCCC website prior to the site visit.
	2	16/11/2012	Sections C, E.1 and E.6 were revised in response to the findings raised by the assessment team.
	3	03/01/2013	The MR form was revised to reflect the latest form available on the UNFCCC website. Section D.2; and E.6 were revised in response to the findings raised. Editorial revisions were made on the title page.
	4	08/01/2013	This is the Final version of the MR. Section B.2.2 was revised in response to the open findings.
15.	Emission Reduction Spreadsheet		
	a) Version 1 dated 15/10/2012		
16.	JMR (Form B) – 33 kV (12 MW; KBCWP-03) – July 2012 to September 2012		
17.	JMR (Form B) – 33 kV (56.8 MW; KBCWP-02) – July 2012 to September 2012		
18.	JMR (Form B) – 220 kV (sub-station; KBCWP-01) – July 2012 to September 2012		
19.	Form B – Previous MP (September 2011 to June 2012)		
20.	Line loss calculation sheet issued by the state utility – Current MP (July 2012 to September 2012)		
21.	Line loss calculation sheet issued by the state utility – Previous MP (September 2011 to June 2012)		
22.	Monthly invoices issued by PP to BESCO (July 2012 to September 2012)		

23. PPA dated 01/03/2006 between BESCOM and the PP
24. Commissioning Certificates of all WEGs commissioned from 29/09/2006 to 28/12/2006
25. Single Line diagram indicating WEG location and sub-station
26. Meter test certificates: <ul style="list-style-type: none"> a) Location KBCWP-01 issued by KPTCL with date of testing 24/07/2012 b) Location KBCWP-01 issued by KPTCL with date of testing 08/12/2011 c) Location KBCWP-02 issued by BESCOM with date of testing 24/07/2012 d) Location KBCWP-02 issued by BESCOM with date of testing 24/01/2012 e) Location KBCWP-03 issued by BESCOM with date of testing 24/01/2012 f) Location KBCWP-03 issued by BESCOM with date of testing 25/06/2012
27. Monthly shutdown details for the project activity for the period from July 2012 to September 2012 (Excel document)
28. CEA CO ₂ Baseline Database for the Indian Power Sector Version 1.1 http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm
29. Daily Generation Data recorded by the Enercon Personnel at the sub-station (September 2011 to June 2012)

9. Findings Overview

	CARs	CLs	FARs
Total Number raised	2	-	-

Date:	09/11/2012		Raised by:	Assessment Team		
Type:	CAR	Number:	#1		Reference:	Section 2 (3.1; 8.1); Section 3 (1.2) & Section 5
Lead Assessor Comment:					Date: 09/11/2012	
<p>1. Section B.2.2 of the MR Version 1 dated 15/10/2012 gives reference to a revised PDD (Version 6 dated 03/09/2012) submitted with the request for issuance of MP3. The PP is requested to clarify the date of approval of the same.</p> <p>2. The table in section C of the MR Version 1 dated 15/10/2012 mentions details of meter test checking during monitoring period. The PP is requested to clarify the inconsistency in the dates mentioned under the column titled “Last date of meter calibration” between the MR and the meter test certificates submitted during the site visit. The PP is also requested to clarify if the dates refer to the last date of ‘meter calibration’ or ‘meter testing’.</p> <p>3. In the table titled ‘Baseline Emission Reductions calculation for project activity’ in section E.1 of the project activity, PP is requested to clarify the inconsistency in the decimal places for EGy. The monthly values have 2 decimal places while the total value has 3 decimal places.</p> <p>4. In section E.6 of the MR Version 1 dated 15/10/2012 the PP has clarified that the higher ER values compared to the values in the registered PDD is due to the seasonal nature of wind and that the current monitoring period covers the high wind season. The PP is requested to provide objective evidence to justify the same.</p>						
Project Participant Response:					Date: 16/11/2012	
<p>1. We would like to submit to DOE that a correction in the registered PDD along with the request for issuance of MP3 of this project has been submitted to UNFCCC for approval on dated 19 Oct 2012 which is currently at the stage of ‘undergoing completeness check’.</p> <p>2. Inconsistency in table in section C of MR has been corrected. Further we would like to clarify to DOE that dates refer to ‘meter testing’ instead of ‘meter calibration’ and accordingly corrections have been made.</p> <p>3. Inconsistency has been corrected under table titled ‘Baseline Emission Reductions calculation for project activity’ in section E.1.</p> <p>4. We would like to submit to DOE that the current monitoring period of project activity falls under the high wind season. We have analysed the annual PLF of project activity starting from Oct 2011 till the end of monitoring period i.e. Sep 2012, which comes out 19.76%. PLF of 19.76% is well below than the PLF mentioned under the registered PDD and project is additional. Further PLF during the remaining period except the monitoring period (Oct 11 to Sep 12) is 15.64%, which clearly shows that present monitoring period doesn’t cover the low wind season.</p>						
Documentation Provided as Evidence by Project Participant:						
<p>1) Meter calibration certificates</p> <p>2) Annual PLF calculation sheet</p>						
Information Verified by Lead Assessor:						

<ol style="list-style-type: none"> 1. Section B.2.2 of the MR Version 2 dated 16/11/2012 has been checked for the revisions made by the PP. 2. Section C of the MR Version 2 dated 16/11/2012 has been checked for the revisions made by the PP in the table mentioning the meter nos. and meter testing dates. 3. The table titled 'Baseline Emission Reductions calculation for project activity' in section E.1 of the MR Version 2 dated 16/11/2012 has been checked for the revisions made by the PP in the values of EGy. 4. Section E.6 of the MR Version 2 dated 16/11/2012 has been checked for the revisions made by the PP. The annual PLF calculation sheet submitted by the PP covering the 12 month period from October 2011 to September 2012 has been checked. 	
Reasoning for not Acceptance or Acceptance and Close Out:	
<ol style="list-style-type: none"> 1. The PP has confirmed that the revised PDD (Version 6 dated 03/09/2012) submitted with the request for issuance of MP3 is pending EB approval. Hence the closure of this point is pending EB approval. Hence open. 2. The PP has correctly revised the heading of the column titled "Last date of meter calibration" to "Meter Test Checking detail before monitoring period". The verification team has confirmed that all dates mentioned under this column are prior to the start date of the current monitoring period. The dates under this column are consistent between the MR and the meter test certificates submitted during the site visit. The PP has also clarified that the dates refer to the dates of 'meter testing' and not 'meter calibration'. The same is now reflected in section C of the MR and has been confirmed from the meter test certificates submitted during the site visit. The authenticity of the meter test certificates were confirmed during the site visit by interviewing the officials from the state utility. Hence accepted and closed out. 3. The PP has now consistently used 3 decimal places for all values of EGy. Hence accepted and closed out. 4. The PP has submitted a excel sheet showing the PLF calculation for a one year period from October 2011 to September 2012. The generation value used to calculate the actual PLF are correct. The calculations in the excel sheet have been checked and are found to be correct. The actual PLF for the 12 month period from October 2011 to September 2012 has been correctly calculated to be 19.76%. The actual PLF for the 9 month period from October 2011 to June 2012 (i.e. excluding the current monitoring period) has been correctly calculated to be 15.64%; which indicates that the current monitoring period falls in the high wind season. The PP has also correctly calculated the actual PLF (32.04%) achieved during the current monitoring period. On comparing the actual PLF with the PLF considered during the validation (26.5%), it is found that the actual PLF is 20.89% higher than the PLF for the current monitoring period. This justifies the 20.9% increase in the actual ERs compared to the estimated ERs. Hence accepted and closed out. 	
Acceptance and Close out by Lead Assessor: OPEN	Date: 01/12/2012
Project Participant Response:	Date: 08/01/2013
We would like to submit to DOE that the revised PDD (Version 6 dated 03/09/2012) has been approved by UNFCCC on date 08/01/2013.	
Documentation Provided as Evidence by Project Participant:	
MR Version 4	
Information Verified by Lead Assessor:	
The UNFCCC webpage of this project activity (UN PA 1259) has been checked for the approval to the revised PDD (Version 6 dated 03/09/2012). The revised MR Version 4 dated 08/01/2013 has been checked for the revisions made by the PP.	
Reasoning for not Acceptance or Acceptance and Close Out:	
The revised PDD has been approved by the EB on 08/01/2013 as reflected on the webpage of this project activity (UN No. 1259). The PP has revised section B.2.2 in the MR to mention the approval of the PDD and the date of approval. This is in line with the guidelines for completing the MR. Hence accepted and closed out.	
Acceptance and Close out by Lead Assessor:	Date: 08/01/2013

Date:	31/12/2012		Raised by:	Assessment Team	
Type:	CAR	Number:	#2	Reference:	Comments during TR stage
Lead Assessor Comment:				Date: 31/12/2012	
MR					
5. The latest available version of the MR template available on the UNFCCC website has been published in EB70. The template used for the MR is not the latest available one. Please clarify.					
6. The units for estimated and actual emission reductions are not mentioned on the title page of the MR.					
7. The purpose of the data for the parameters in section D.2 of the MR is not in line with the MR completion guidelines. Please clarify.					
8. Section E.6 of the MR mentions “. Further PLF during the remaining period except the monitoring period (Oct 11 to Sep 12) is 15.64%” Please clarify the appropriateness of the same.					
Project Participant Response:				Date: 03/01/2013	
1. MR has been revised in accordance with the latest MR template available on the UNFCCC website published in EB70.					
2. Units for estimated and actual emission reductions has been mentioned on the title page of the MR.					
3. Purpose of data is Calculation of Baseline Emissions and same has been corrected in revised MR.					
4. In appropriate information has been removed from revised PDD.					
Documentation Provided as Evidence by Project Participant:					
Revised MR (version 3.0)					
Information Verified by Lead Assessor:					
The revised MR Version 3 dated 03/01/2013 has been checked for the revisions made by the PP.					
Reasoning for not Acceptance or Acceptance and Close Out:					
1. The PP has revised the MR in accordance with the latest MR form available on the UNFCCC website published in EB 70. The revised MR has been checked to confirm that the PP has correctly filled the same. Hence accepted and closed out.					
2. The PP has now correctly mentioned the units (tCO ₂ e) for estimated and actual emission reductions on the title page of the MR. Hence accepted and closed out.					
3. PP has revised the purpose of the data for all the parameters in section D.2 of the MR to “Calculation of baseline emissions”. This revision is correct and in line with section D of the MR completion guidelines. Hence accepted and closed out.					
4. The PP has removed the following statement from Section E.6 of the MR “Further PLF during the remaining period except the monitoring period (Oct 11 to Sep 12) is 15.64%”. This information is additional to the justification already mentioned. Hence accepted and closed out.					
CAR #2 is closed out					
Acceptance and Close out by Lead Assessor:				Date: 04/01/2013	

10. Statement of Competence

Name: Sudeep Kodialbail

Status

- Lead Assessor	<input checked="" type="checkbox"/>	- Expert	<input checked="" type="checkbox"/>
- Assessor	<input checked="" type="checkbox"/>	- Financial Expert	<input type="checkbox"/>
- Local Assessor	India	- Technical Reviewer	<input type="checkbox"/>

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	<input checked="" type="checkbox"/>
Technical Area(s): <i>TA 1.2 Energy generation from renewable energy sources</i>	
2. Energy Distribution	<input type="checkbox"/>
Technical Area(s):	
3. Energy Demand	<input type="checkbox"/>
Technical Area(s):	
4. Manufacturing	<input type="checkbox"/>
Technical Area(s):	
5. Chemical Industry	<input type="checkbox"/>
Technical Area(s):	
6. Construction	<input type="checkbox"/>
Technical Area(s):	
7. Transport	<input type="checkbox"/>
Technical Area(s):	
8. Mining/Mineral Production	<input type="checkbox"/>
Technical Area(s):	
9. Metal Production	<input type="checkbox"/>
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	<input type="checkbox"/>
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	<input type="checkbox"/>
Technical Area(s):	
12. Solvent Use	<input type="checkbox"/>
Technical Area(s):	
13. Waste Handling and Disposal	<input type="checkbox"/>
Technical Area(s):	
14. Afforestation and Reforestation	<input type="checkbox"/>
Technical Area(s):	
15. Agriculture	<input type="checkbox"/>
Technical Area(s):	

Approved Member of Staff by:

Siddharth
Yadav

Date:

06/02/2012

Name: Ravi Kant
Soni

Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	x

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	x
Technical Area(s): TA 1.2 Energy generation from renewable energy sources	
2. Energy Distribution	
Technical Area(s):	
3. Energy Demand	
Technical Area(s):	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 12/10/2012

Name: **Vikas Bankar**

Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	x

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	x
Technical Area(s): <i>TA 1.2 Energy generation from renewable energy sources</i>	
2. Energy Distribution	x
Technical Area(s): <i>TA 2.1 Electricity distribution TA 2.2 Heat distribution</i>	
3. Energy Demand	x
Technical Area(s): <i>TA 3.1 Energy Demand</i>	
4. Manufacturing	
Technical Area(s):	
5. Chemical Industry	
Technical Area(s):	
6. Construction	
Technical Area(s):	
7. Transport	
Technical Area(s):	
8. Mining/Mineral Production	
Technical Area(s):	
9. Metal Production	
Technical Area(s):	
10. Fugitive Emissions from Fuels (solid, oil and gas)	
Technical Area(s):	
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	
Technical Area(s):	
12. Solvent Use	
Technical Area(s):	
13. Waste Handling and Disposal	
Technical Area(s):	
14. Afforestation and Reforestation	
Technical Area(s):	
15. Agriculture	
Technical Area(s):	

Approved Member of Staff by: **Siddharth Yadav** Date: **17/07/2012**

11. Photographic Evidence

Unique reference number:

KBCWP-01 (Main Meter - 6605121)

Parameter: Electricity exported and imported from all WEGs

Name of equipment: Trivector Energy Meter

Date: 08/11/2012



Unique reference number:

KBCWP-01 (Check Meter - 6605122)

Parameter: Electricity exported and imported from all WEGs

Name of equipment: Trivector Energy Meter

Date: 08/11/2012



Unique reference number:

Parameter: EGexport and EGimport

KBCWP-02 (Main Meter - 5389967)

Name of equipment: Trivector Energy Meter

Date: 08/11/2012



Unique reference number:

Parameter: EGexport and EGimport

KBCWP-02 (Check Meter - 5389970)

Name of equipment: Trivector Energy Meter

Date: 08/11/2012



Unique reference number:

Parameter: EGexport and EGimport

KBCWP-03 (Main Meter - 5463844)

Name of equipment: Trivector Energy Meter

Date: 08/11/2012



Unique reference number:

Parameter: EGexport and EGimport

KBCWP-03 (Check Meter - 5463845)

Name of equipment: Trivector Energy Meter

Date: 08/11/2012

